FW500 SE. SERVICE MANUAL

(Revision 0 / 2013.02.19)

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1. Introduction

1.1. Preface

Thank you for purchasing of our CAS scale.

This scale has been designed with CAS reliability, under rigid quality control and with outstanding performance.

WE hope that your departments enjoy with high quality of CAS product.

This manual will help you with proper operations and care of the FW500 series.

Please keep it handy for the future references.

1.2. Precaution

- Make sure that you plug your scale into the proper power outlet.
- Place the scale on a flat and stable surface.
- Plug into a power outlet 30 minutes before operations.
- Keep the scale away from strong EMI noises may cause incorrect weight readings.
- This scale must be installed in a dry and liquid free environment.
- Do not subject the scale to sudden temperature changes.
- Do not subject the platter to sudden shocks.
- If the scale is not properly level, please adjust the 4 legs at the bottom of the scale (turn legs clockwise or counterclockwise) so as to center the bubble of the leveling gauge inside the indicated circle.

1.3. Specifications

FW500-C

MODEL	FW500-C		
Approval	Max 3/6 kg e=d=1/2 g	Max 6/15 kg e=d=2/5 g	Max 15/ 30 kg e=d=5/10 g
External Resolution	1/3,000 dual	1/3,000 dual	1/3,000 dual
MAX Tare	***- 2.999 kg***	***- 5.998 kg***	***- 14.995 kg***
Display	110 x 35[mm]/43" x 13.8" 5 digit LCD		
Symbols	STABLE, ZERO, TARE, g, kg, lb, oz, Low Battery		
Keys	ZERO, TARE, HOLD(Hold Ver.), UNIT(Unit Ver.), POWER		
Functions	Weighing, WaterProof level IP-69k Hold(Hold Ver.), Unit Conversion(Unit Ver.), Sleep Mode Function		
Dimensions	303 x 266 x 109 mm		
Platter size	212 x 247 mm		
Weight	2.7 Kg (Without Battery)		
Power	1.5V x 4 units (D size Battery) or 12V 300mA Adapter		
Operation Time	Approx. 1200hours (Manganese battery)/ 2500hours (Alkaline at 20°C /68°F)		
Operating Temperature	-10°C ~ +40°C / 14°F ~ 104°F		
Minimum Voltage Level of The Battery	About 3.3V		
Option	12V Adapter 300mA, Rear Display		

※ Notice: Specifications are subject to change for improvement without notice.

FW500-E

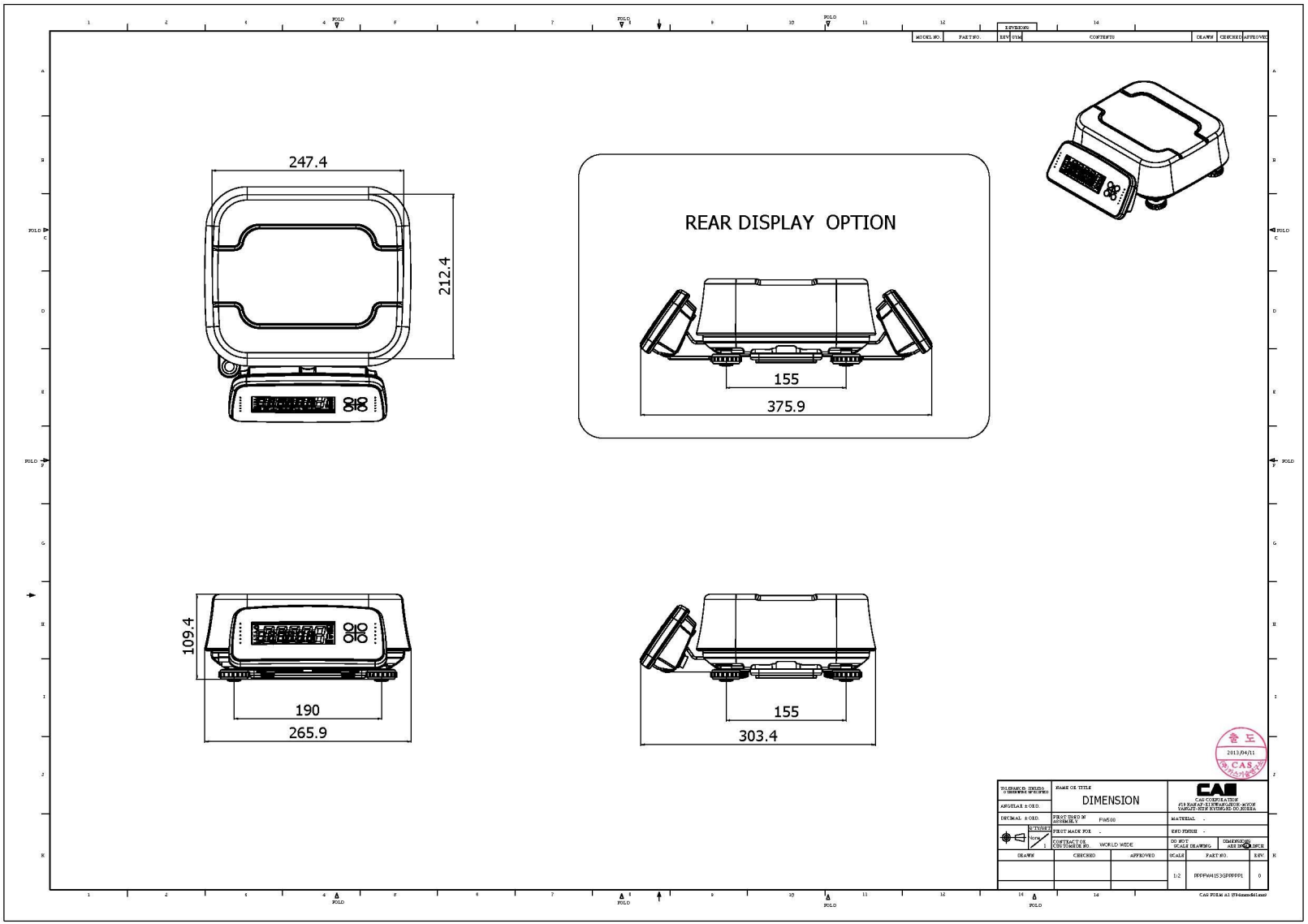
MODEL	FW500-E		
Approval	Max 3/6 kg e=d=1/2 g	Max 6/15 kg e=d=2/5 g	Max 15/ 30 kg e=d=5/10 g
External Resolution	1/3,000 dual	1/3,000 dual	1/3,000 dual
MAX Tare	***- 2.999 kg***	***- 5.998 kg***	***- 14.995 kg***
Display	75 x 19 [mm] 6 digit LED		
Symbols	STABLE, ZERO, TARE, Charge, Low Battery		
Keys	ZERO, TARE, HOLD(Hold Ver.), UNIT(Unit Ver.), POWER		
Functions	Weighing, WaterProof level IP-69k Hold(Hold Ver.), Unit Conversion(Unit Ver.), Sleep Mode Function		
Dimensions	303 x 266 x 109 mm		
Platter size	212 x 247 mm		
Weight	2.7 Kg (Without Battery)		
Power	6 V 3.2Ah Pb battyery , 12V 300mA Adapter		
Operation Time	Approx. 100hours (PB battery)		
Operating Temperature	-10°C ~ +40°C / 14°F ~ 104°F		
Minimum Voltage Level of The Battery	About 3.3V		
Option	12V Adapter 300mA, Rear Display		

※ Notice: Specifications are subject to change for improvement without notice.

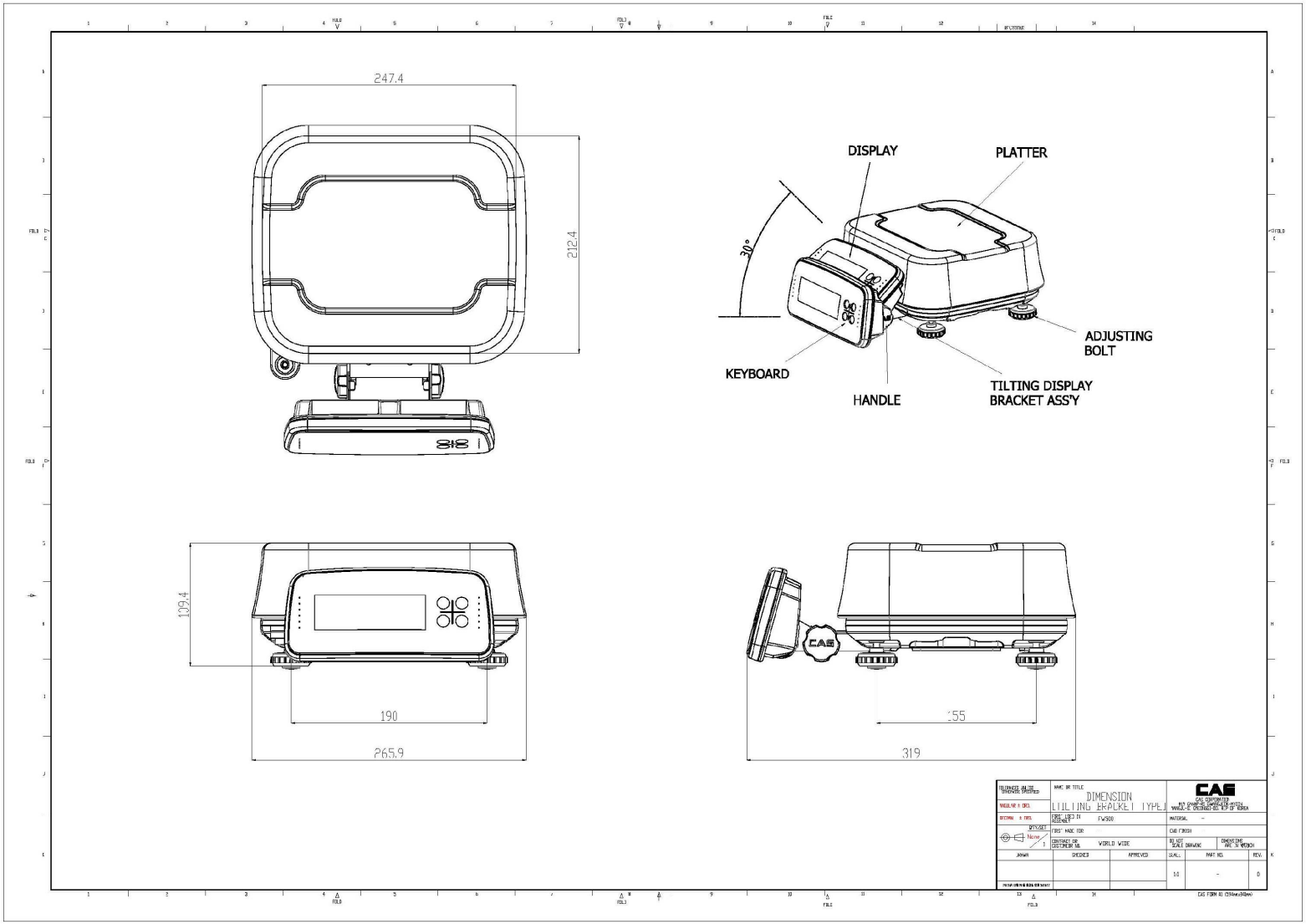
Key

Key	Function
ZERO (-O-) **[Set]**	To set zero point To do **[SET]** key in the SETUP mode.
TARE	To input or cancel the tare (the weight of container).
HOLD	To make the weight of item stable. This weight is average value.
POWER	To turn on or off.

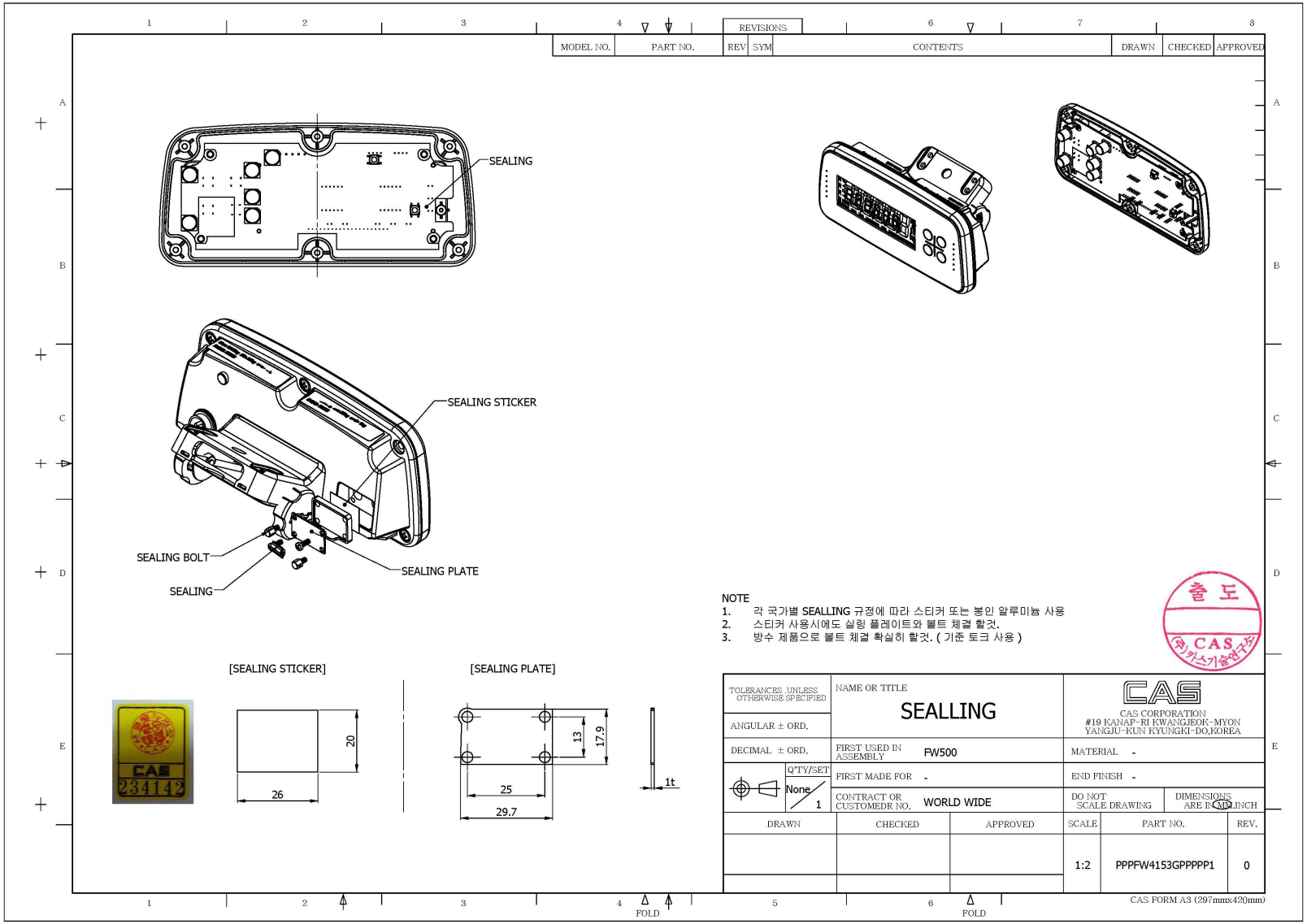
1.4. Dimension



1.5. Dimension [TILTING DISPLAY TYPE]



1.6. Sealing method



2. Calibration

2.1. General Calibration

Pressing and holding calibration switch press [POWER] key to go to calibration mode.

User can move to other mode by using [ZERO] key in the calibration mode.

User also moves to other sub-modes for each mode by using [TARE] key.

Please simply follow below procedure to move to other mode.

(1) Calibration Mode: Pressing and holding "Calibration Switch" press [POWER] key.

(2) It displays "CAL-0" after "CAL", and it blinks the version of scale three times.

(3) Selecting menu: press [TARE].

(4) ENTER(Setting) : [TARE] key

MODE	Function
CAL 1	Display normalized AD
CAL 2	Display Keypad infomation-
CAL 3	Weight Setting Mode "UnLoad" → [TARE] → "MIDD" → [TARE] after loading for 1/3 weight → "FULL" → [TARE] after loading for Full weight → "MIDD" → [TARE] after loading for 1/3 weight → "END"
CAL 4	Option Setting (Refer to Table 1)
CAL 5	Display filtered Raw AD
CAL 7	% Calibration
CAL 8	Battery calibration
CAL 9	Gravity constant
CAL 10	Set calibration factor "Unit" → [TARE] → select 0, 1 (0:kg, 1: lb) → [TARE] "CAPA" → [TARE] → select capacity → [TARE] "MCAPA" → [TARE] → select mid-capacity → [TARE] "W-dP" → [TARE] → Select Decimal Point → [TARE] " 1 d " → [TARE] → Select division → [TARE] "Dual" → [TARE] → Enable dual interval (0:disable, 1:enable) → [TARE] "tare" → [TARE] → Enable custom tare (0:disable, 1:enable) → [TARE]
CAL 11	Set nation(00 : OIML , 01 : NTEP , 02: KOREA)

2.1.1. C4 Setting

2.1.1.1. C4-1 Setting

BIT 6~7	Initial Zero range	3	5%
		2	10%
		1	3%
		0	2%
BIT5	Last digit enable	0	Disable
		1	Enable
BIT4	Key zero percent	0	±3% key zero percent
		1	±2% key zero percent
BIT 2~3	Successive tare	3	(+), (-) All Direction successive Tare
		2	(+) Direction successive Tare
		1	(-) Direction successive Tare
		0	One Time tare
BIT0~1	Zero mark type	0	Gross zero indication
		1	Net zero indication
		2	Both(gross and net) zero indication

2.1.1.2. C4-3 Setting

BIT7	Dot Type	0	"." dot
		1	"," comma
BIT6	Use Preset tare	0	Don't use
		1	Use
BIT5	Use Back light	0	Don't use
		1	Use
BIT4	Use Head message	0	Don't use
		1	Use
BIT3	Use gram	0	Don't use
		1	Use
BIT2	Use oz	0	Don't use
		1	Use
BIT1	Use lb	0	Don't use
		1	Use
BIT0	Use Kg	0	Don't use
		1	Use

2.1.2. SPAN Calibration Setting (C-3)

(1) Pressing and holding "Calibration Switch" press [POWER] key.
After "CAL" message blinks three times and shows the version of scale, it displays "CAL 1" message.
(2) Press [ZERO] to display "CAL-3".
(3) Press [TARE] key and then it displays "zero " message.
(4) Press [TARE] key and then it displays "midup" message
(5) Load middle weight (ex:1/3 full capacity) on the platform
(6) Press [TARE] key and then it displays "span " message
(7) Load full weight on the platform
(8) Press [TARE] key and then it displays "middn" message
(9) Load middle weight (ex:1/3 full capacity) on the platform
(10) Press [TARE] key and then it display "CAL 3" message

2.1.3. Gravity Constant Value Setting (C-9)

Current gravitational Acceleration value is set to 9.7994 m/s^2 .

(11) Pressing and holding "Calibration Switch" press [POWER] key.
After "CAL" message blinks three times and shows the version of scale, it displays "CAL-1" message.
(12) Press [ZERO] to display "C-9".
(13) Press [TARE] key, and then " G-1" message and "9.7994" will be shown. The first digit,"9" will blink.
(14) Input a gravitational acceleration value by using [ZERO] key.
(15) Press [TARE] key, and then "G-2" message blinks."9.7994" will be shown. The first digit,"9" will blink.
(16) Input a gravitational acceleration value by using [ZERO] key.
(17) Press [TARE] key to save the gravitational acceleration value, and "C-9 " message will be shown.

2.1.4. Calibration factor Setting (C-10)

(1) Pressing and holding "Calibration Switch" press [POWER] key.
(2) After "CAL" message blinks three times and shows the version of scale, it displays "CAL-1" message.
(3) Press [ZERO] to display "C-10".
(4) Press [TARE] key, and then "UNIT " message and "0" will be shown. The first digit,"0" will blink. It means calibration unit is "kg" (0 : kg, 1 : lb)
(5) Input a calibration unit by using [ZERO] key.
(6) Press [TARE] key, and then "CAPA" message blinks."0015" will be shown. The first digit,"0" will blink. It means a full-capability is "15 (calibration unit, kg or lb)"

(7) Input a capability by using [ZERO] key.

(8) Press [TARE] key, and then "MCAPA" message blinks."0005" will be shown. The first digit,"0" will blink. It means a mid-capability is "05 (calibration unit, kg or lb)"

(9) Input a capability by using [ZERO] key.

(10)Press [TARE] key, and then "W-dP " message blinks."3" will be shown. The first digit,"3" will blink. It means a weight decimal point is "3 (will display 0.000)"

(11)Input a weight decimal point by using [ZERO] key.

(12) Press [TARE] key, and then "1d " message blinks."0.005" will be shown. The third digit,"0" will blink. It means a division is "0.005 (calibration unit, kg or lb)"

(13) Input a division by using [ZERO] key.

(14) Press [TARE] key, and then "dual " message blinks."1" will be shown. The third digit,"1" will blink. It means a dual interval is disable. (0 : disable, 1 : enable)"

(15) Input a dual interval enable by using [ZERO] key.

(16) Press [TARE] key to save the calibration factor, and "C-10 " message will be shown.

2.1.5. Displaying Real A/D Value (C-5)

Display Raw AD

2.1.6. Percent Calibration (C-7)

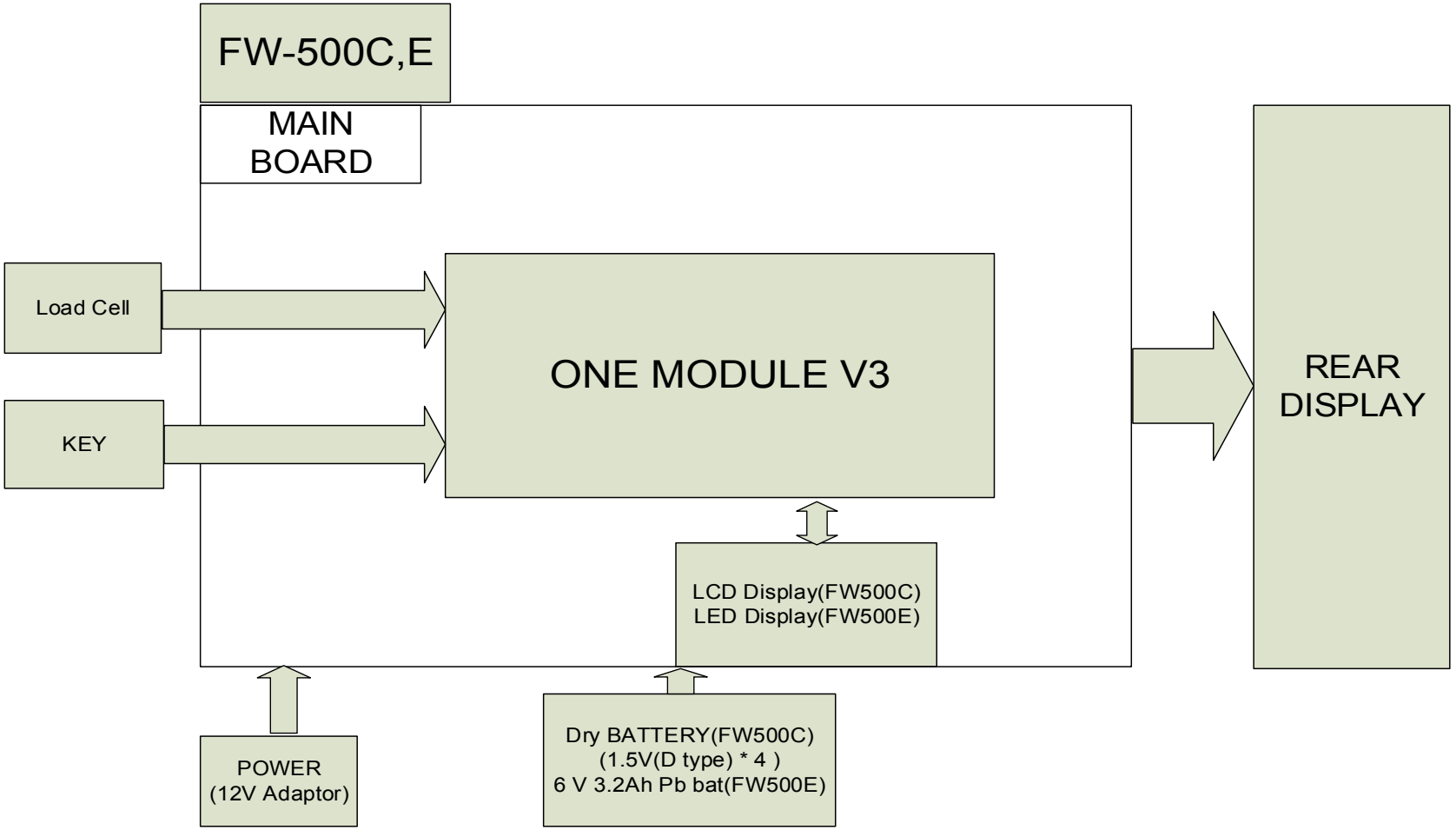
(1) Pressing and holding "Calibration Switch" press [POWER] key.
After "CAL" message blinks three times and shows the version of scale, it displays "CAL 1" message.
(2) Press [ZERO] to display "CAL-7".
(3) Press [TARE] key and then it displays "per 0 " message. Select the percent value using the
[numeric] key. You can choose 10~90 percent. (Last digit of percent must be 0.)
(4) Press [TARE] key and then it displays "zero" message
(5) Press [TARE] key and then it displays "pspan " message
(6) Load choice percentage weight of full weight on the platform
(7) Press [TARE] key and then it displays "CAL 7" message

2.1.7. Battery Calibration (C-8)

(1) Pressing and holding "Calibration Switch" press [POWER] key.
After "CAL" message blinks three times and shows the version of scale, it displays "CAL 1" message.
(2) Press [ZERO] to display "CAL-8".
(3) Press [TARE] key and then it displays voltage of battery.
(4) Change the jumper-pin of main PCB, 'BAT' to '+3.3V'.
(5) Press [ZERO] key two times and then Press [-] key two times.
And then it display '330'
(6) Change the jumper-pin of main PCB, '+3.3V' to 'BAT'.
(7) You can see the calibrated voltage of battery.

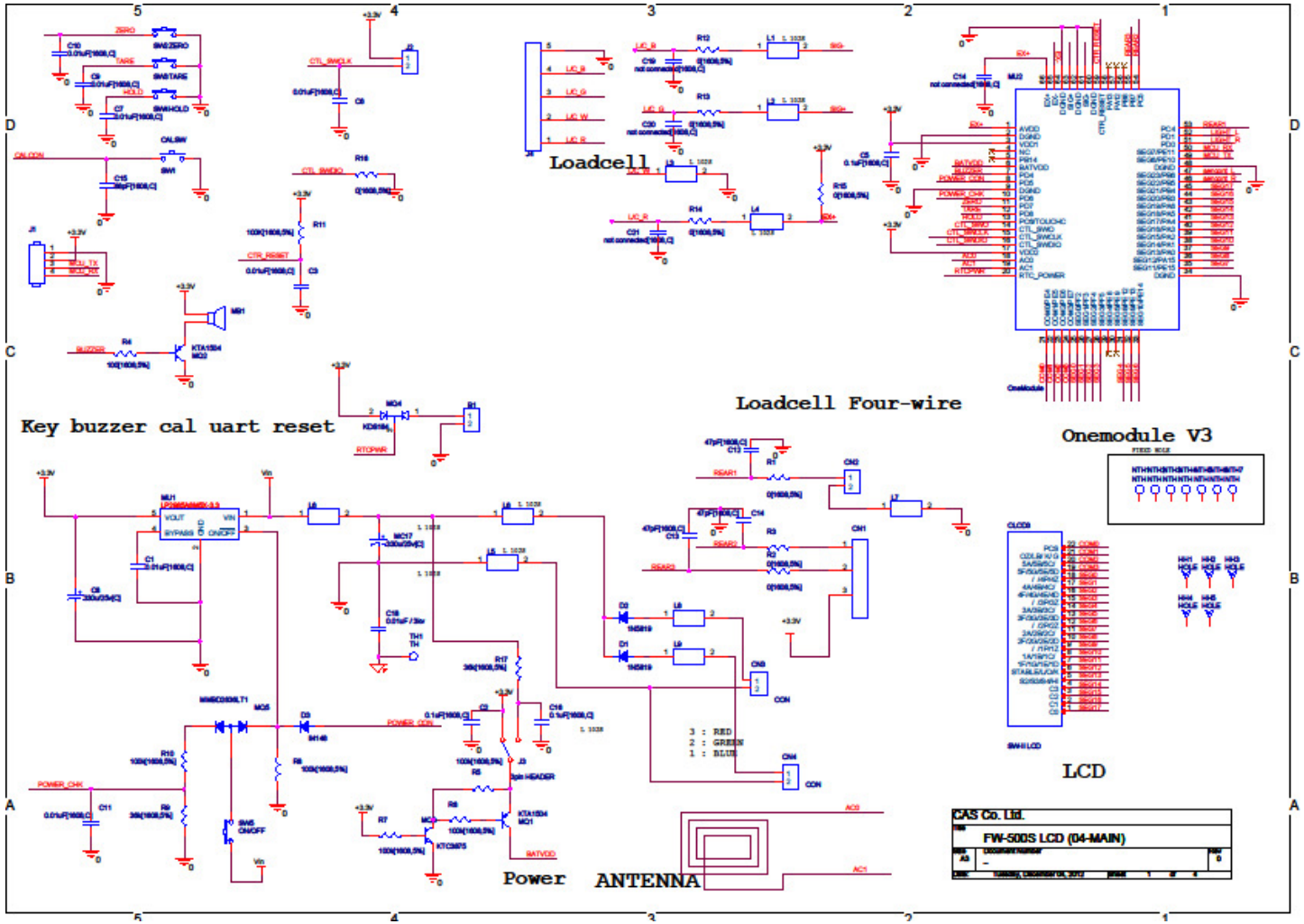
3. The Schematics and Diagram

3.1. System Block Diagram

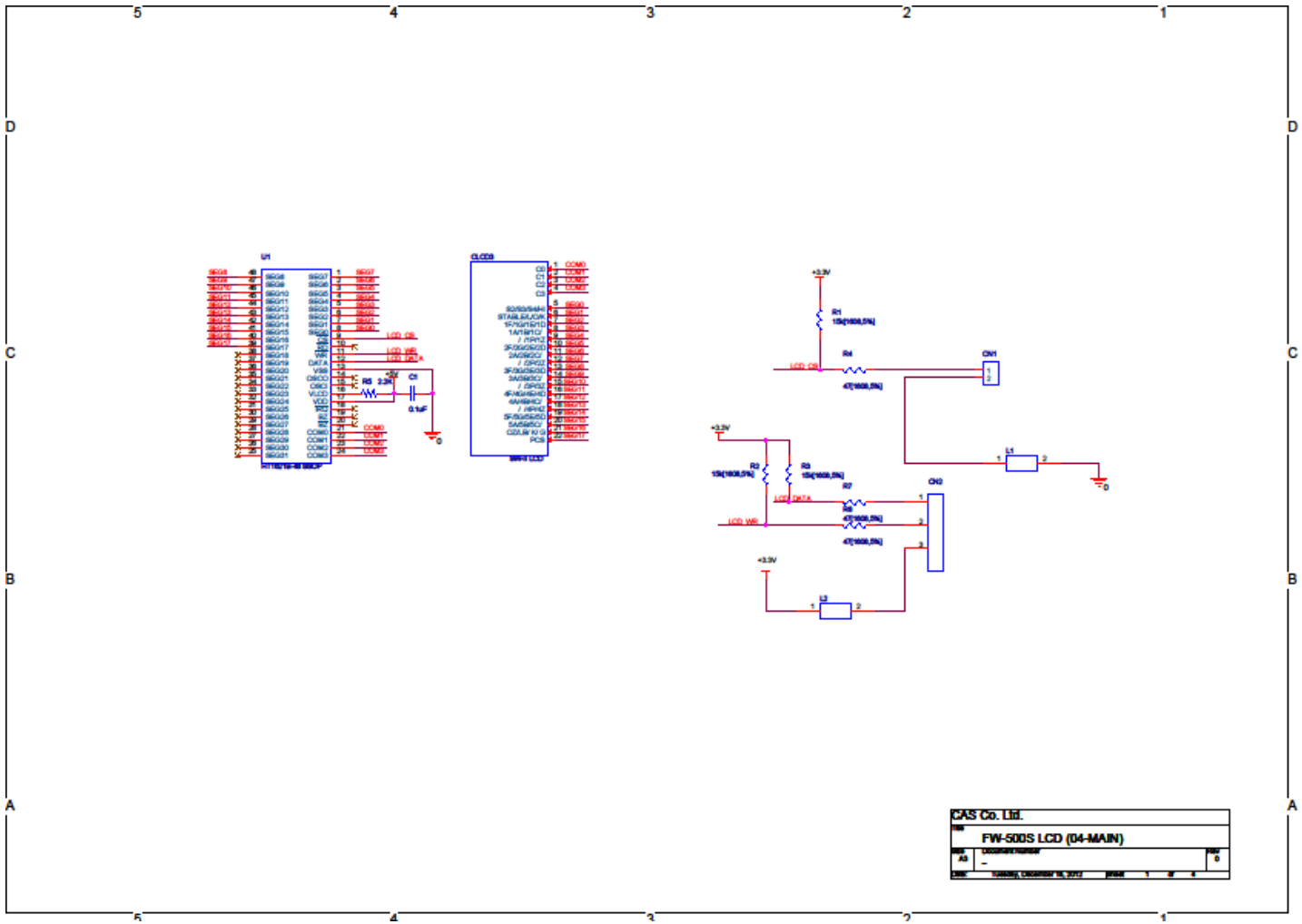


3.2. Circuit Diagram

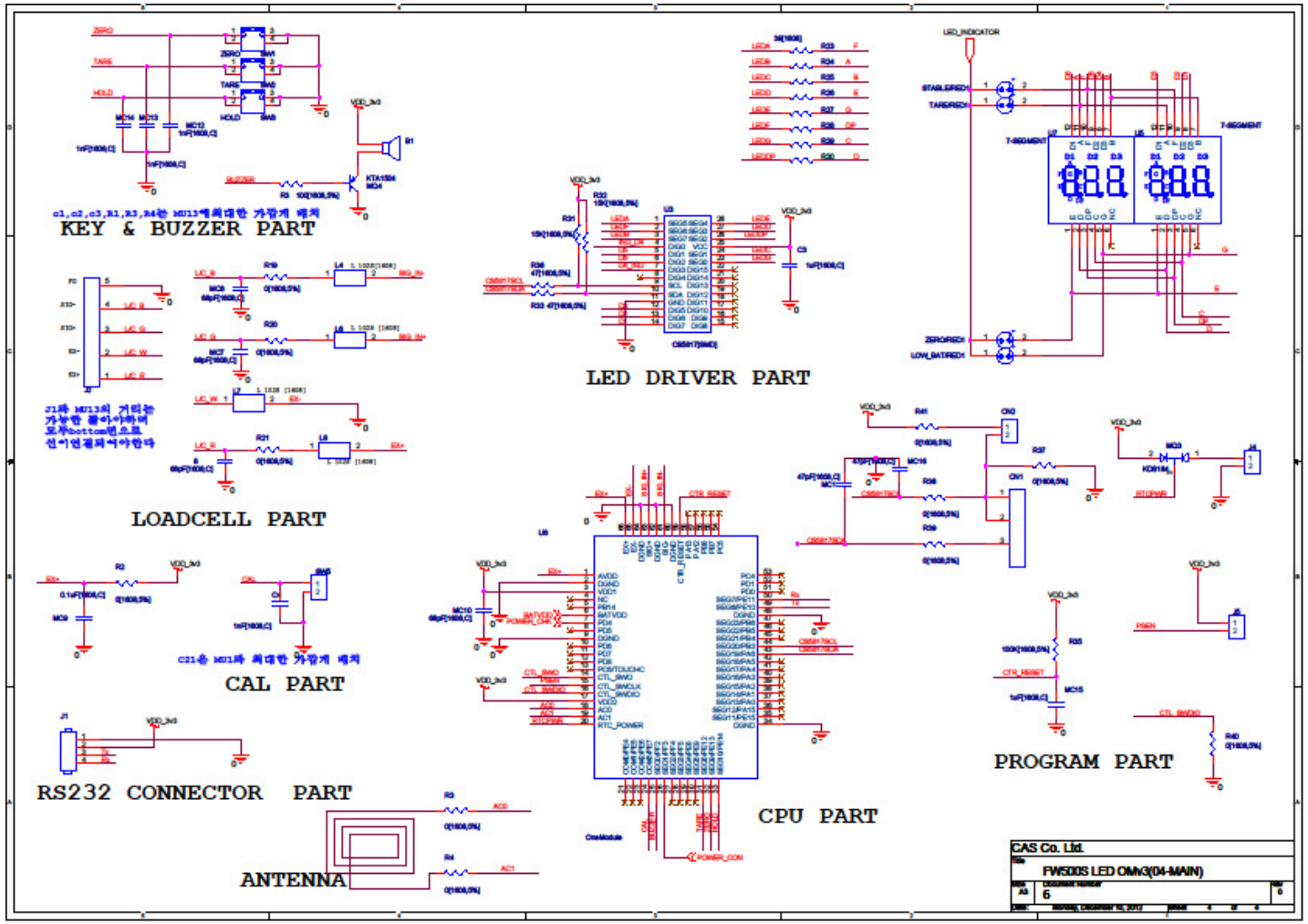
3.2.1 FW500C Main PCB

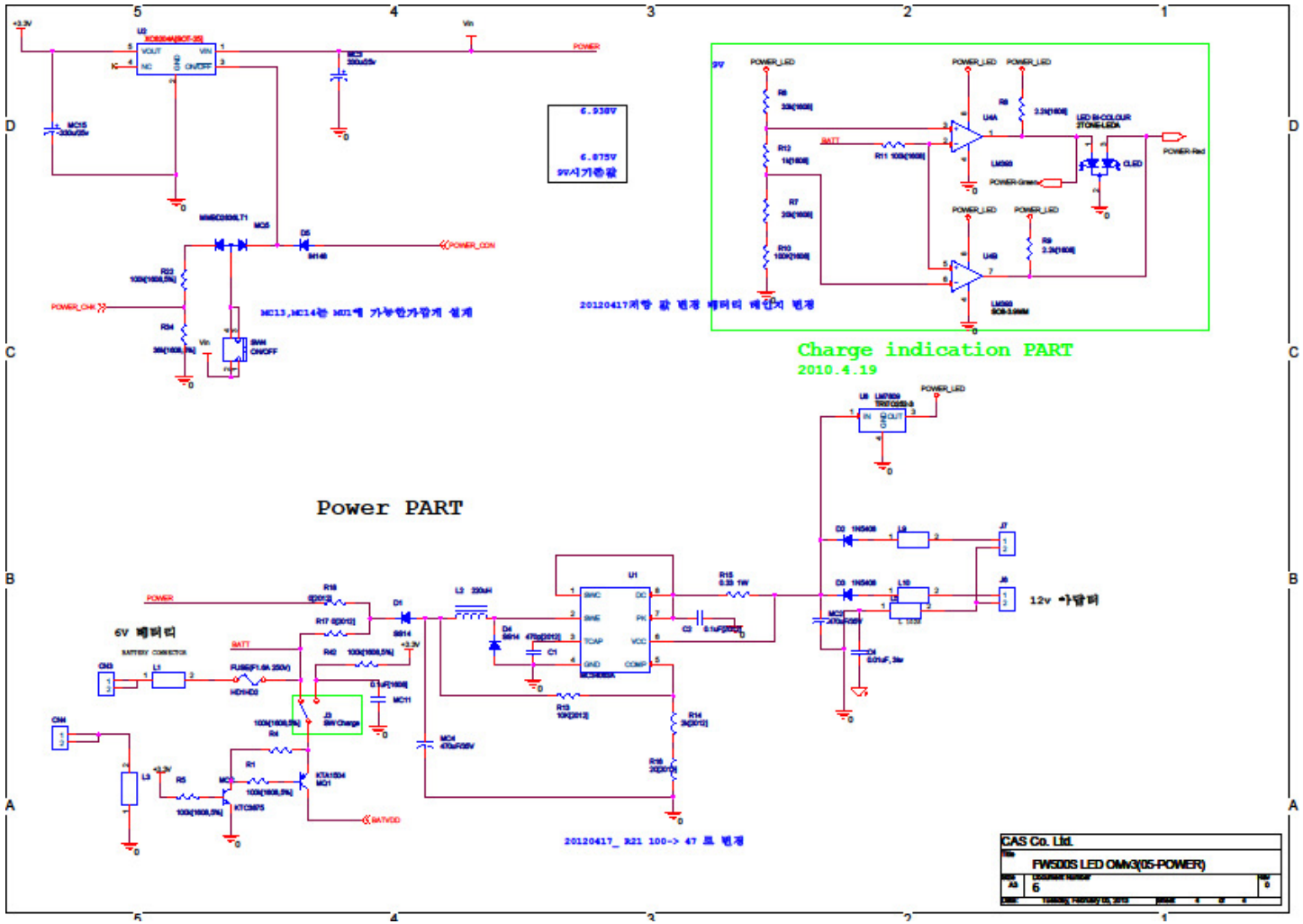


3.2.2 FW500C Rear Display PCB

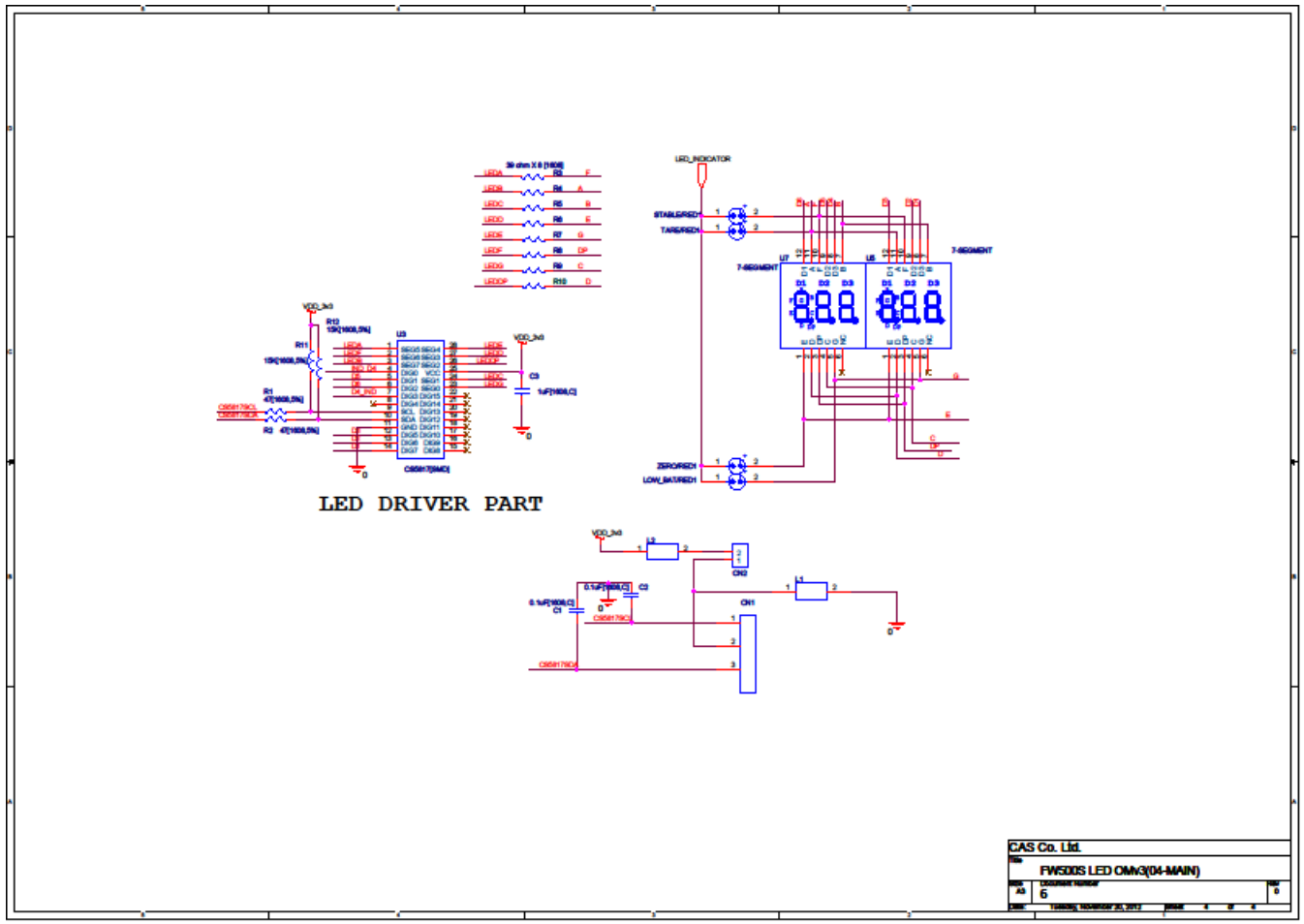


3.2.3 FW500E Main PCB



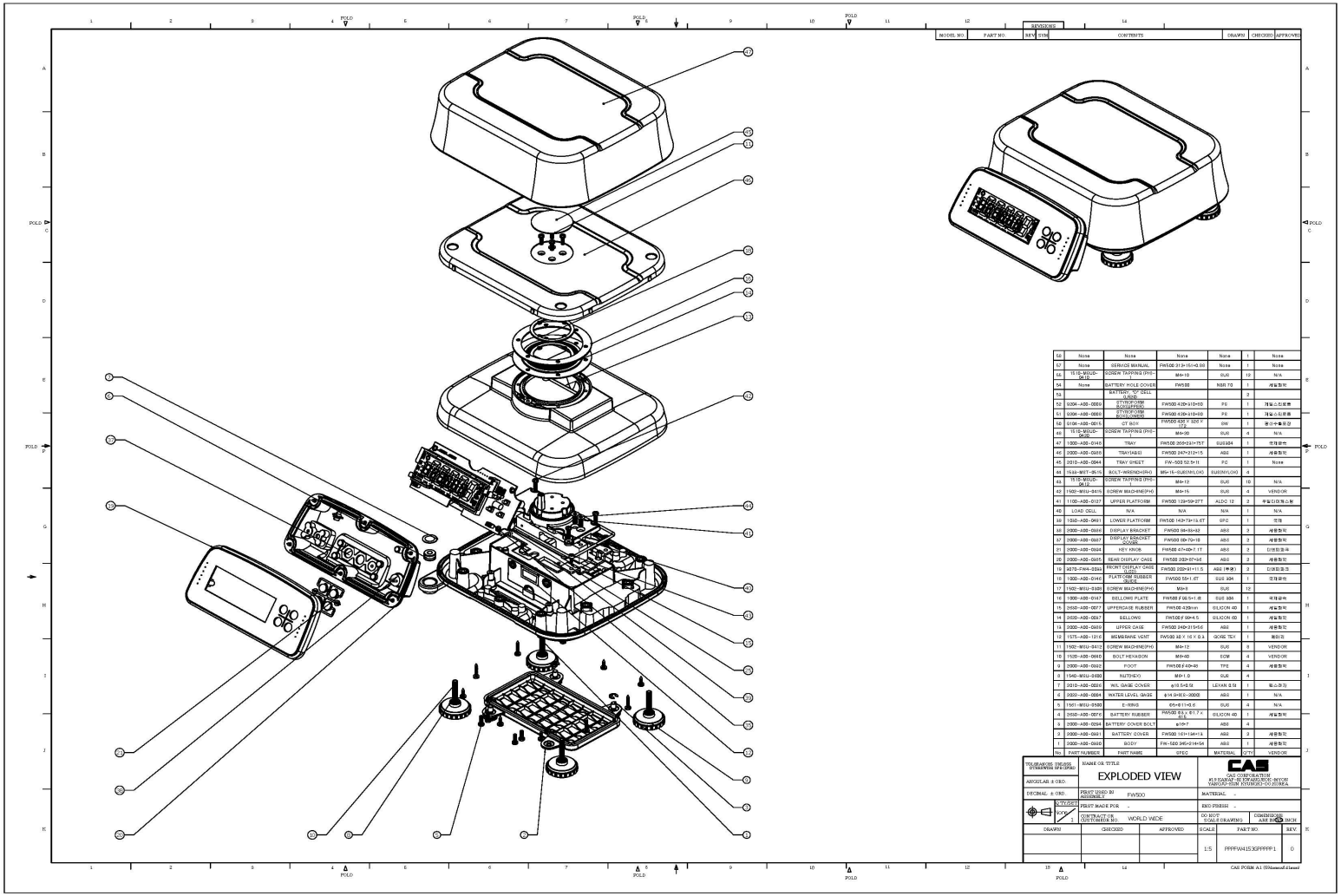

6.930V
6.875V
9V시 기준값
MC13,MC14는 MC1에 가능한가깝게 설계
20120417저항 값 변경 배터리 레귤러 변경
Charge indication PART
2010.4.19
Power PART
6V 배터리
12v 카달버
20120417_ R21 100-> 47 로 변경
CAS Co. Ltd.
FW500S LED OMV3(05-POWER)

3.2.4 FW500-E Rear Display PCB

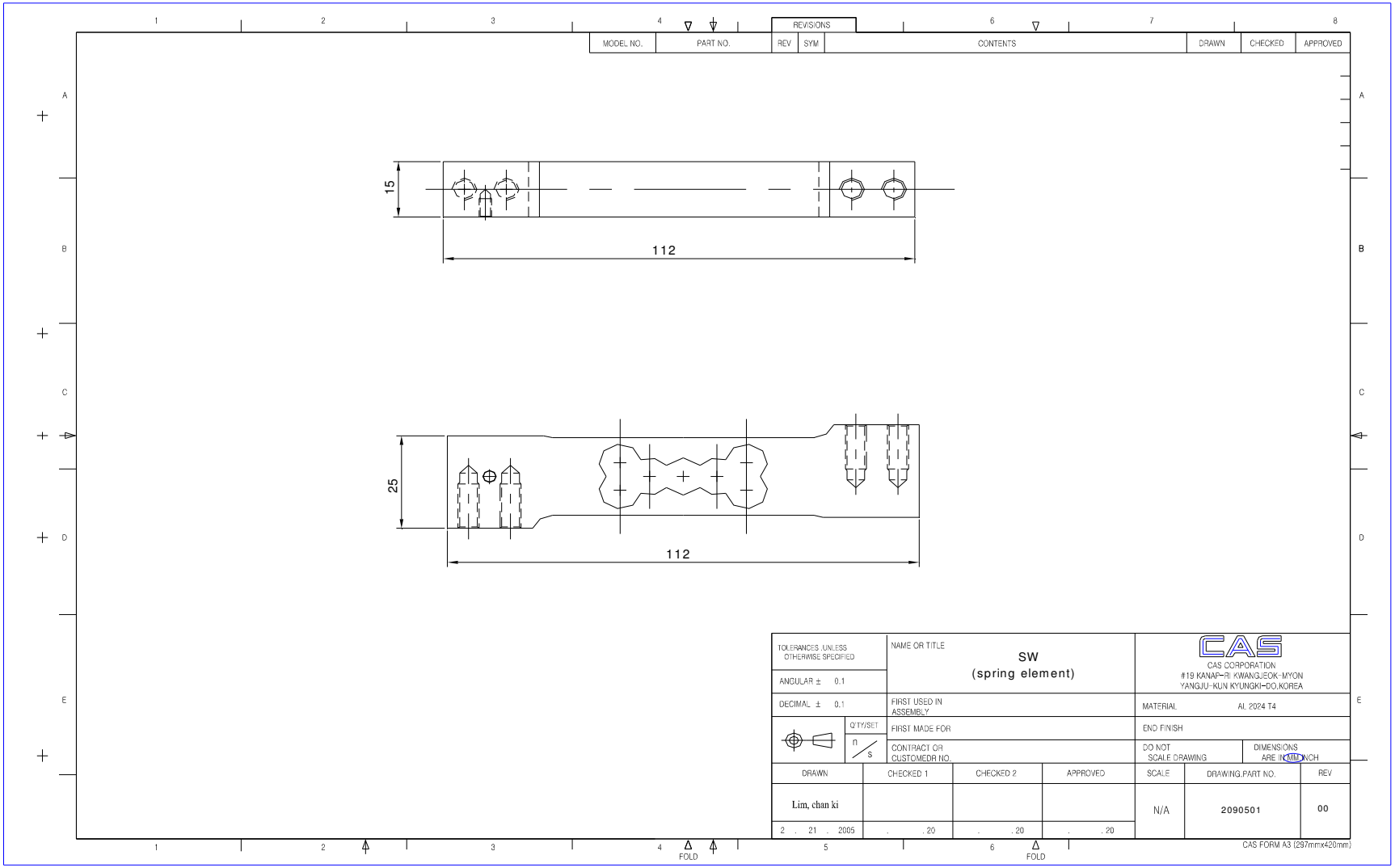


4. Exploded View

4.1. FW500 (

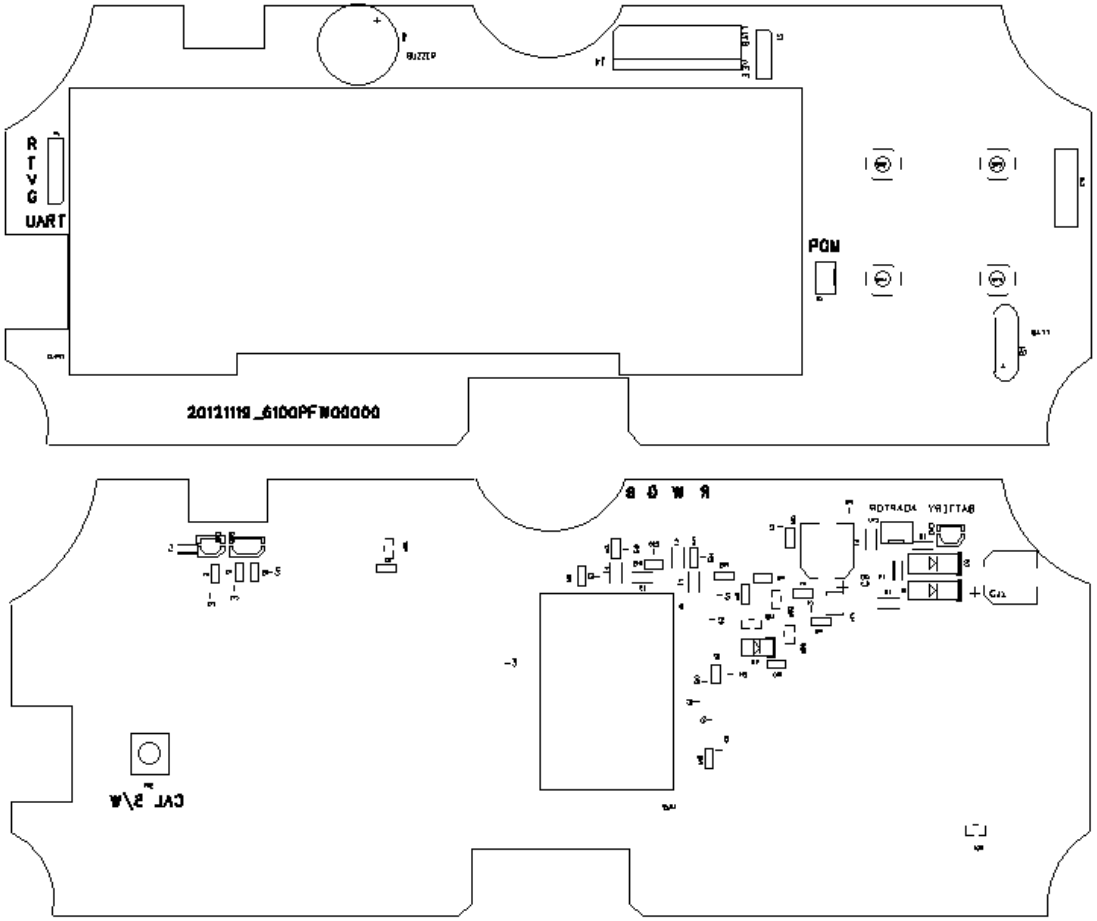


5. Load Cell drawing

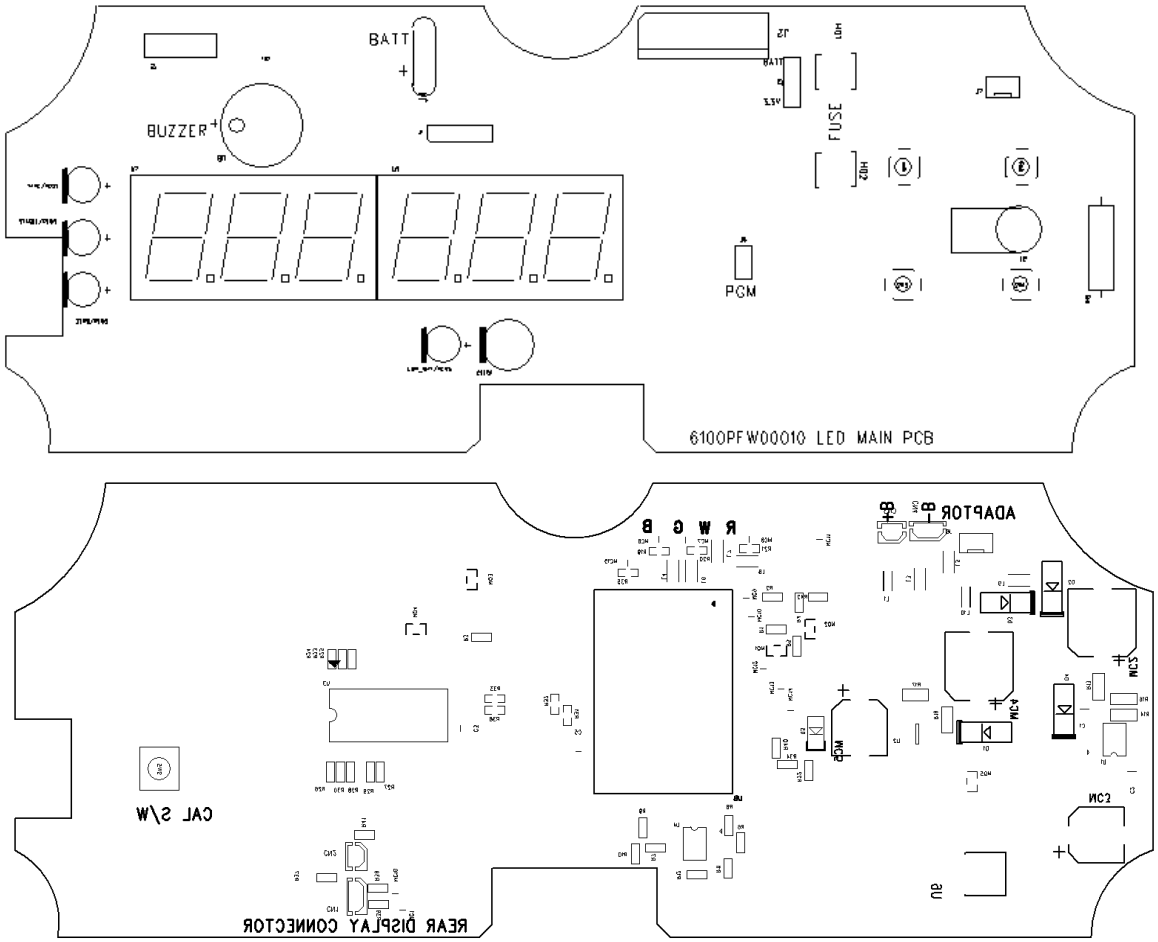


6. Part Location

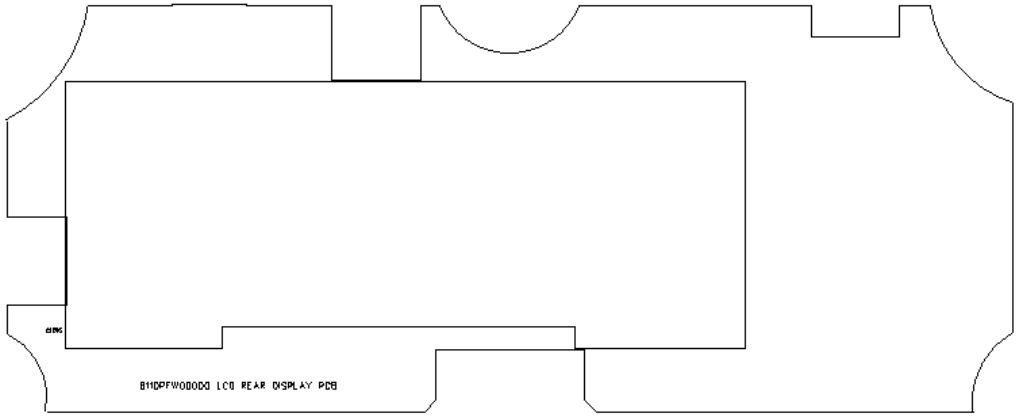
6.1 FW500C Main PCB (Top,Bottom)

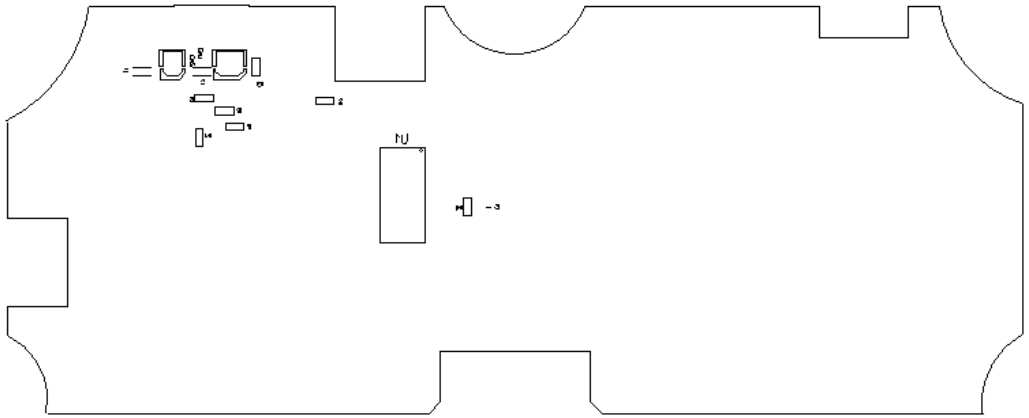


6.2 FW500E Main PCB (Top,Bottom)

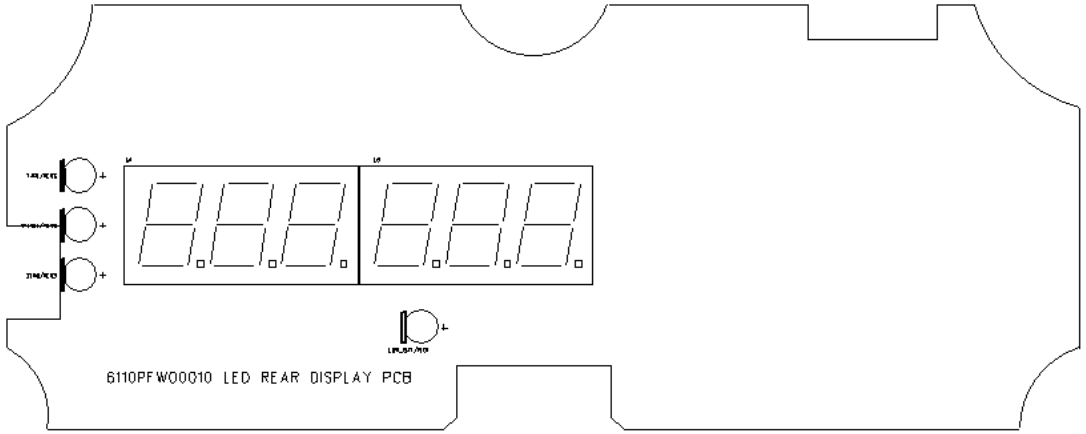


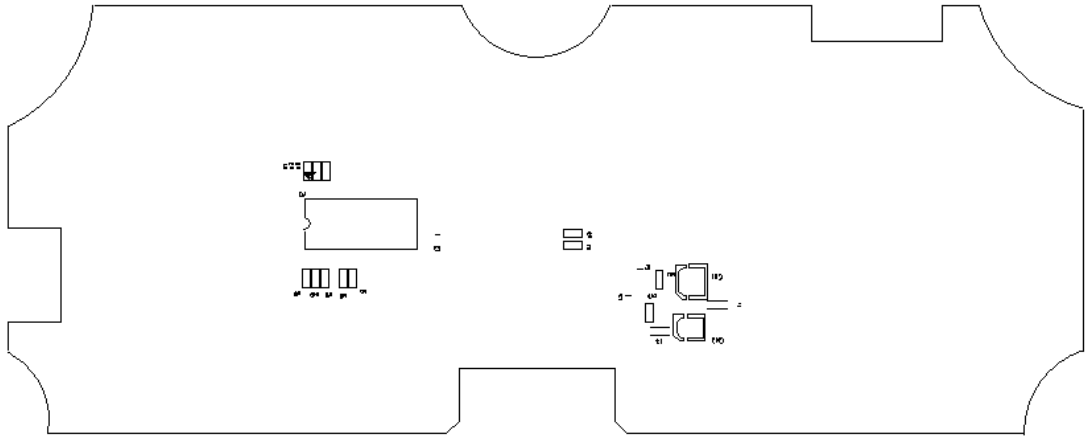
6.3 FW500C Rear Display PCB (Top,Bottom)





6.4 FW500E Rear Dislpay PCB (Top,Bottom)





7. Error Messages & Solution

Error Message on Display	Description	Solution
"Err 0"	The "Err 0" occurs when scale is not stable.	Remove unstable facts.
"Err 1"	The "Err 1" occurs when a current zero point has shifted from the last span calibration.	Please call your CAS dealer.
"Err 2"	The "Err 2" is not a real error. Only it prompts return CAL switch to the normal position.	Please call your CAS dealer.
"Err 3"	The "Err 3" is an overload error.	Please remove the weight.
"Err 9"	The "Err 9" is no weight error. When scale is in counting mode, you must load the weight. If you have no weight on your scale, you can see this error message.	Please load the weight on your tray.
“Err 11”	The "Err 11" means a writing error of the internal nonvolatile memory. To recognize this error, be sure to check the voltage on the circuit and do calibration procedures.	If it still has "Err 11", replace the digital module.
“Err 12”	The "Err 12" warns that the scale has lost the parameters for weighing regulations or has lost the factors for a digital span calculation.	Enter each condition codes again. Please try a span calibration again if still not fixed.
“Err 14”	The "Err 14" means calibration range is not correct.	Please call your CAS dealer.

8. Part List (PPPFW4153GPPPPP1)

8.1.1 FW500 (Electronic part)

1.1 ONE MODULE V3 MAIN PCB

No	Part Number	Specification	Part Name	Location	Q'ty
1	6200IPU08400	IC(MCU)	EFM32G840F128	U1	1
2	6214IS012300	IC(A/D CONVERTER)	ADS1230	U3	1
3	6205I002464A	IC(EEPROM)	M24LR64[tssop]	U2	1
4	6715CHP01050	CONDENSER-CHIP	CL05F105JB5NC(1uF)	C12,C14,C15	3
5	6715CHP01040	CONDENSER-CHIP	CL05F104JB5NC(0.1uF)	C1,C2,C3,C4,C5,C6,C7,C8,MC9,C9,C10,C16	12
6	6715CHP02220	CONDENSER-CHIP	CL05F222JB5NC(2.2nF)	C11	1
7	6538ID302030	RESISTOR-CHIP 1/16W	RR0510P-203D(20k)	R1,R2,R3,R4,R6,R12,R13(R8,R9,R10,R11:not connected)	7
8	6538ID301040	RESISTOR-CHIP 1/16W	RR0510P-104D(100k)	R5	1
9	6538ID301530	RESISTOR-CHIP 1/16W	RR0510P-153D(15k)	R7	1
10	61N0A0000000	PCB-MAIN	61N0A0000000 (ONEMODUEV3)		1
11	6221IS013370	IC(CLOCK)	DS1337 (uSOP)	U4	1
12	7010ZK03276D	CRYSTAL	32.768kHz SMD TYPE	X1	1

1.2 FW500_LCD MAIN PCB

No.	Part Number	Part Name	Specification	Location	Q'ty
1	7212D004093B	FW500 LCD	D02846A(FW500 LCD 3.3V)	CLCD3	1
2	2000A0000660	BRACKET-LCD	114.8*44.8*BLACK(SW-1)		
3	7809CAL00220	CONNECTOR	53047 2PIN CONNECTOR	CN1,CN3	2
4	7809CAL00330	CONNECTOR	53047 3PIN CONNECTOR	CN2	1
5	7809CAL00020	CONNECTOR(WAFER)	LWL0640(2PIN)	CN4	1
6	6713CHP01030	CONDENSER-CHIP	CS1608 103J500NR(10nF)	C1,C3,C6,C7,C9,C10,C11,	7
7	6713CHP01040	CONDENSER-CHIP	CS1608 104J500NR(100nF)	C2,C5,C16.C4	4
8	6704C250330A	CONDENSER-CHIP(SMD)	330u/25v	C8,MC17	2
9	6713CHP04700	CONDENSER-CHIP	CS1608 680J500NR(47pF)	C12,C13,C14	3
10	6713CHP06800	CONDENSER-CHIP	CS1608 680J500NR(68pF)	C15,C19,C20,C21	4
11	6710CAP0103B	RESISTOR-CHIP 1/16W	0.01uF / 3kv	C18	1
12	6291IS058190	DIODE POWER	1N5819(SMD)	D1,D2	2
13	6294ISW41480	RESISTOR-CHIP 1/16W	1N4148	D3	1
14	7821CJM00100	JUMPER	2.54mm Pitch Straight pin header4PIN)	J1	1
15	7821CJM00100	JUMPER	2.54mm Pitch Straight pin header(3PIN)	J3	1
16	7821CJM00100	JUMPER	2.54mm Pitch Straight pin header(2PIN)	J2	1
17	6670T0001020	INDUCTANCE	HB-1M2012-102JT(TP2,LP2,DBB)	L1,L2,L3,L4,L5,L6	6
18	6670T0005000	INDUCTANCE	BLM18BB050SN1	L7,L8,L9	3
19	7002Z0000000	PIEZO BUZZER	APR,ADR(CHINA)	MB1	1
20	6281I0015040	TRANSISTOR CHIP	KTA1504	MQ1,MQ2	2
21	6281I0038750	TRANSISTOR CHIP	KTC3875 SY	MQ3	1

22	6294ICP01840	DIODE-CHIP	KDS184	MQ4	1
23	6290ISW28360	IC(DUAL SWITCHING DIODES)	MMBD2836LT1-SOT-23	MQ5	1
24	6220IS0C332A	IC(REGULATOR)	LP2985A8M5X(3.3)_SOT23	MU1	1
25	6528IF000000	RESISTOR-CHIP 1/10W(1608)	RR0816P-000F(0, 1%)	R1,R2,R3,R12,R13,R14,R15,R16	8
26	6528IF001010	RESISTOR-CHIP 1/10W(1608)	RR0816P-101F(100, 1%)	R4	1
27	6528IF301030	RESISTOR-CHIP 1/10W(1608)	RR0816P-103F(10k, 1%)	R17	1
28	6528IF301040	RESISTOR-CHIP 1/10W(1608)	RR0816P-104F(100K, 1%).	R5,R6,R7,R8,R10,R11	6
29	6528IF303630	RESISTOR-CHIP 1/10W(1608)	RR0816P-363F(36k,1%)	R9	1
30	7600STA1102S	TACT S/W	MT1102S-2(SMD 4.3MM)	SW1	1
31	7600STA1105B	TACT S/W	KPT-1105B(DJTA-1102C)	SW2,SW3,SW4,SW5	4
32	6100PFW00000	pcb	6100PFW00000		1
33	6PN0A000000B	PCB-ONE MODULE V3 ASS'Y	6PN0A000000B	MU2	1
34	7520P0002000	BATTERY-LIMN	CR1220-PIN TYPE	B1	1

1.3 FW500_LED MAIN PCB

No	Part Number	Part Name	Specification	Location	Q'ty
1	7002Z0000000	PIEZO BUZZER	APR,ADR(CHINA)	B1	1
2	7232DRG00050	LED LAMP	ø5-(R,G) BL-BEG 204	CLED	1
3	7809CAL00330	CONNECTOR	53047 3PIN CONNECTOR	CN1	1
4	7809CAL00220	CONNECTOR	53047 2PIN CONNECTOR	CN2,CN3,CN4	3
5	7809CAL00020	CONNECTOR(WAFER)	LWL0640(2PIN)	J6, (J7(not connected))	1
6	6712CHP04710	CONDENSER-CHIP	CL21F 471KBNC(2012)	C1	1
7	6712CHP01040	CONDENSER-CHIP	CL21F 104KBNC(2012)	C2	1
8	6713CHP01050	CONDENSER-CHIP	CS1608 105J500NR(1uF)	C3,MC15	2
9	6710CAP0103B	RESISTOR-CHIP 1/16W	0.01uF / 3kv	C4	1
10	6713CHP01020	CONDENSER-CHIP	CS1608 102J500NR(1nF)	MC12,MC13,MC14	3
11	6291IS058190	DIODE POWER	1N5819(SMD)	D1,D4,D2,D3	4
12	6294ISW41480	RESISTOR-CHIP 1/16W	1N4148	D5	1
13	7620s0516000	FUSE	1.6A/250V ø5 UL,S,VDE,BSI(유)		1
14	7630S0002060	FUSE HOLDER	FC 51 Fuse Clip	HD1, HD2	2
15	7821CJM00100	4 pin HEADER	2.54mm Pitch Straight pin header	J1	1
16	7821CJM00100	3pin HEADER	2.54mm Pitch Straight pin header	J3	1
17	7600STA1102S	TACT S/W	MT1102S-2(SMD 4.3MM)	SW5	1
18	7821CJM00100	2pin HEADER	2.54mm Pitch Straight pin header	J5	1
19	7232DR050330	LED LAMP	ø5-RED 40 mcd LSR 50330	ZERO/RED1,TARE/RED1, STABLE/RED1,LOW_BAT/RED1	4
20	723299950150	LED LAMP 고무 지지대	ø5 LED 고무 지지대 1.5mm		4
21	6670T0005000	INDUCTANCE	BLM18BB050SN1	L1,L10	2

22	6670T0102200	INDUCTANCE	220uH(NT SERIES)	L2	1
23	6670T0001020	INDUCTANCE	HB-1M2012-121JT(TP2,LP2,DBB)	L3,L4,L5,L6,L7,L8,L9	7
24	6713CHP04700	CONDENSER-CHIP	CS1608 680J500NR(47pF)	MC1,MC16	2
25	6704C350470A	CONDENSER-CHIP(SMD)	470uF/25V, 10x10	MC2,MC4	2
26	6704C250330A	CONDENSER-CHIP(SMD)	330uF/25v, 8x10	MC3,MC5	2
27	6713CHP06800	CONDENSER-CHIP	CS1608 680J500NR(68pF)	MC6,MC7,8,MC10	4
28	6713CHP01040	CONDENSER-CHIP	CS1608 104J500NR(100nF)	MC9,MC5,MC11	3
29	6281I0015040	TRANSISTOR CHIP	KTA1504	MQ1,MQ4	2
30	6281I0038750	TRANSISTOR CHIP	KTC3875	MQ2	1
31	6294ICP01840	DIODE-CHIP	KDS184	MQ3	1
32	6290ISW28360	IC(DUAL SWITCHING DIODES)	MMBD2836LT1	MQ5	1
33	6528IF310000	RESISTOR-CHIP 1/10W(1608)	RR0816P-104F(100K, 1%)	R1,R4,R5,R22,R35	5
34	6528IF000000	RESISTOR-CHIP 1/10W(1608)	RR0816P-000F(0, 1%)	R2,R3,R19,R20,R21,R37,R38, R39,R40,R41	10
35	6528IF301030	RESISTOR-CHIP 1/10W(1608)	RR0816P-103F(10K, 1%)	R42	1
36	6528IF001010	RESISTOR-CHIP 1/10W(1608)	RR0816P-101F(100, 1%)	R3	1
37	6528IF303330	RESISTOR-CHIP 1/10W(1608)	RR0816P-333F(33K, 1%)	R6	1
38	6528IF302030	RESISTOR-CHIP 1/10W(1608)	RR0816P-203F(20K, 1%)	R7	1
39	6528IF302220	RESISTOR-CHIP 1/10W(1608)	RR0816P-222F(2.2K, 1%)	R8,R9	2
40	6528IF301040	RESISTOR-CHIP 1/10W(1608)	RR0816P-104F(100K, 1%)	R10,R11	2
41	6528IF301020	RESISTOR-CHIP 1/10W(1608)	RR0816P-102F(1K, 1%)	R12	1
42	6527IF301030	RESISTOR-CHIP(2012)	RR1220P-103F(10K, 1%))	R13	1
43	6527IF300200	RESISTOR-CHIP(2012)	RR1220P 202F(2K)(1%)	R14	1
44	6512CJ000033	RESISTOR 2W	CFR 0.33Ω (±5%)	R15	1

45	6527IF002000	RESISTOR-CHIP 1/10W(2012)	RR1220P-200F(20Ω)(2012)	R16	1
46	6527IF000000	RESISTOR-CHIP 1/10W	RR1220P-000F(0Ω)(2012)	R17,R18	2
47	6528IF003900	RESISTOR-CHIP 1/10W(1608)	RR0816P-390F(39, 1%))	R23,R24,R25,R26,R27,R28,R29,R30	8
48	6528IF301530	RESISTOR-CHIP 1/10W(1608)	RR0816P-153F(15k, 1%))	R31,R32	2
49	6528IF004700	RESISTOR-CHIP 1/10W(1608)	RR0816P-470F(47, 1%))	R33,R36	2
50	6528IF303630	RESISTOR-CHIP 1/10W(1608)	RR0816P-363F(36k, 1%))	R34	1
51	7600STA1105B	TACT S/W	KPT-1105B(DJTA-1102C)	SW1,SW2,SW3,SW4	4
52	6242I003406A	IC(DC DC CONVERTER)	MC34063AD	U1	1
53	6220IS0A3320	IC(REGULATOR)	XC6204A332MR(3.3V)	U2	1
54	6224I0058170	IC	CS5817[SMD]	U3	1
55	6241IS003930	IC(LINEAR)	LM393D(SOP)	U4	1
56	7230D0030560	LED	KHN305613(3DIGIT CATHODE)	U5,U7	2
57	6220IS078090	IC(REGULATOR)	KA7809A(D-PACK)	U6	1
58	6PN0A000000B	PCB-ONE MODULE V3 ASS'Y	6PN0A000000B	U8	1
59	6100PFW00010	pcb	6100PFW00010		1
60	7520P0002000	BATTERY-LIMN	CR1220-PIN TYPE	J4	1

1.4 FW500_LCD REAR

No	Part Number	Specification	Part Name	Location	Q'ty
1	7212D004093A	SW LCD	WDN0768(SW-1S OMV3 LCD)	CLCD3	1
2	2000A0000660	BRACKET-LCD	114.8*44.8*BLACK(SW-1)		1
3	7809CAL00330	CONNECTOR	53047 3PIN CONNECTOR	CN1	1
4	7809CAL00220	CONNECTOR	53047 2PIN CONNECTOR	CN2	1
5	6713CHP01040	CONDENSER-CHIP	CS1608 104J500NR(100nF)	C1	1
6	6670T0016080	INDUCTANCE	MMZ1608S102AT	L1,L2	2
7	6538ID301530	RESISTOR-CHIP 1/16W	RR0510P-153D(15k)	R1,R2,R3	3
8	6528ID000000	RESISTOR-CHIP 1/10W	RR0816P-000D(0)	R4,R6,R7	3
9	6528ID300220	RESISTOR-CHIP 1/10W(1608)	RR0816P-222D(2.2K)	R5	1
10	6224I0016210	IC(LCD DRIVER)	HOLTEX HT1621B	U1	1
11	6110PFW00000	REAR DISPLAY pcb			1

1.5 FW500_LED REAR

No	Part Number	Specification	Part Name	Location	Q'ty
1	7809CAL00330	CONNECTOR	53047 3PIN CONNECTOR	CN1	1
2	7809CAL00220	CONNECTOR	53047 2PIN CONNECTOR	CN2	1
3	6713CHP01040	CONDENSER-CHIP	CS1608 104J500NR(100nF)	C1,C2	2
4	6713CHP01050	CONDENSER-CHIP	CS1608 105J500NR(1uF)	C3	1
5	7232DR050330	LED LAMP	ø5-RED 40 mcd LSR 50330	ZERO/RED1,TARE/RED1, STABLE/RED1,LOW_BAT/RED1	4
6	723299950150	LED LAMP 고무 지지대	ø5 LED 고무 지지대		4
7	6670T0005000	INDUCTANCE	BLM18BB050SN1	L1	1
8	6670T0016080	INDUCTANCE	MMZ1608S102AT	L2	1
9	6527ID00470	RESISTOR-CHIP 1/10W	RR1220P-470D(47)	R1,R2	2
10	6527ID003900	RESISTOR-CHIP 1/10W	RR0816P-222D(39)	R3,R4,R5,R6,R7,R8,R9,R10	8

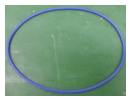
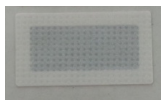
11	6538ID301530	RESISTOR-CHIP 1/16W	RR0510P-153D(15k)	R11,R12	2
12	6224I0058170	IC	CS5817[SMD]	U3	1
13	7230D0030560	LED	KHN305613(3DIGIT CATHODE)	U5,U7	2
14	6110PFW00010	LED REAR DISPLAY PCB			1

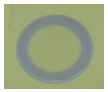
1.6 FW500_LED CABLE

No	Part Number	Part Name	Specification	Location	Q'ty
1	7840W0004640	CONNECTOR WIRE	Φ5*28AWG*9C(5C)*360MM_LED		1
2	7840W0004641	CONNECTOR WIRE	Φ5*28AWG*9C(3C)*360MM*케이스홀드_LCD		1
3	7840W0004642	CONNECTOR WIRE	Φ5*28AWG*9C(5C)*620MM_REAR		1
4	7840W0004643	CONNECTOR WIRE	16BNC-02R*2P/120MM_POWERCABLE		1
	7562P121000F	SMPS ADAPTOR	100-240V/12V1.5A(KOR,콘넥터)5M		1

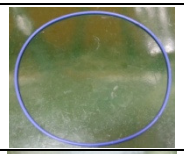
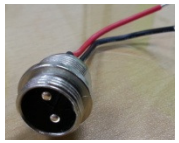
8.1.2 FW500 (Mechanical part)

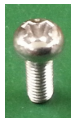
1.1 BODY ASS'Y (PPPFW4MBODPPPPP1)

No	Image	Part Code	Parts Name	DESCRIPTION	Unit	Q'ty
1		2000A0003900	BODY	FW500 240.3*238	EA	1
2		2000A0003910	BATTERY COVER	FW500 161*134*13	EA	1
3		2000A0002940	BATTERY COVER BOLT	ø16*7	EA	4
4		2630A0000760	BATTEY RUBBER	FW-500 415mm	EA	1
5		2000A0003920	FOOT	ϕ40*53	EA	4
6		1575A0012160	MEMBRANE VENT	30*16*0.3t	EA	1
7		2022A0000041	WATER LEVEL GAGE	ø14.9*8(S-2000)상보	EA	1

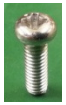
8		2010A0000260	WATER LEVEL GAGE COVER	GAGE COVER(POSCALE)	EA	1
9		1502MSU04120	M SCREW M4X12	M SCREW M4X12	EA	1
10		1510MSU04120	T SCREW M4X12	T SCREW M4X12	EA	11
11		1000A0001500	BATTERY BRACKET	45*50*1.2t	EA	1
12		1540MSU06000	NUT(HEX)	M6*8(SUS)	EA	4
13			글루건		EA	0.005

1.2 DISPLAY ASS'Y (PPPFW4MDISPPPPP1)

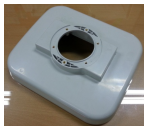
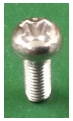
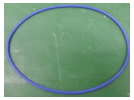
No	Image	Part Code	Parts Name	DESCRIPTION	Unit	Q'ty
2		2000A0003850	REAR DISPLAY CASE	FW-500 202*87*36	EA	1
3		2000A0003860	DISPLAY BRACKET	FW-500 84*83*32	EA	1
4		2000A0003870	DISPLAY BRACKET COVER	FW-500 80*79*10	EA	1
5		2630A0000780	DISPLAY O RING	FW-500 520mm	EA	1
6		7640S0012620	BUSHING TAIL	ø7*27	EA	2
8		7840W0003140	CONNECTOR WIRE	ø13*16	EA	1
9		7810C0000220	SOCKET CAP	ø17.8*6.1	EA	1

10		2000A0003940	KEY KNOB	FW-500 47*40*7.1T	EA	1
11		1503MSU03080	SCREW-MACHINE(WPH)M3*8-SUS	SCREW-MACHINE(WPH)M3*8-SUS	EA	7
12		2630A0000090	O-RING	O-RING P15	EA	1
13		1502MSU03080	M SCREW M3X8	M SCREW M3X8	EA	2
14		1000A0001490	SEALING PLATE	FW-500 29*17*1t	EA	1
15		2620A0000380	SEALING RUBBER	FW-500 32.7*20.9	EA	1
16		9900A0000010	BOLT-SEALING	M3*26(NT-200, 201A)황동	EA	2
17		9900A0000020	SEALING	Φ10*5.6	EA	1

1.3. TRAY ASS'Y (PPPFW4MTRYPPPPP1)

No	Image	Part Code	Parts Name	DESCRIPTION	Unit	Q'ty
1		1000A0001480	TRAY (SUS)	FW-500 266*231*70.5*0.8t	EA	1
2		2000A0003880	TRAY (ABS)	FW-500 247*212*15T	EA	1
4		1502MSU0412	M SCREW M4X12	M SCREW M4X12	EA	4

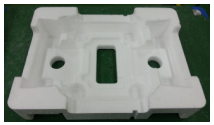
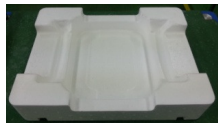
1.4. UPPER CASE ASS'Y (PPPFW4MUPCPPPPP1)

No	Image	Part Code	Parts Name	DESCRIPTION	Unit	Q'ty
1		2000A0003890	UPPER CASE	FW-500 240*215*56	EA	1
2		1502MSU03080	M SCREW (PH)	M3*8	EA	10
3		2630A0000760	BATTEY RUBBER	FW-500 415mm	EA	1
4		2620A0000370	PLATFORM RUBBER	ϕ99*4.5	EA	1
5		1000A0001470	BELLOWS PLATE	ϕ99.5*1.6t	EA	1
6		1000A0001460	PLATFORM RUBBER GUIDE	FW-500 55*1.6T	EA	1

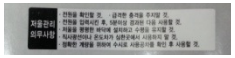
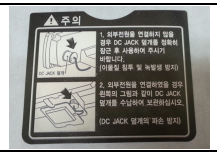
1.5. PLATFORM ASS'Y (PPPFW4MPLAPPPPP1)

No	Image	Part Code	Parts Name	DESCRIPTION	Unit	Q'ty
1		1100A0001270	UPPER PLATFORM	FW-500 123*59*27T	EA	1
2		1030A0004910	LOWER PLATFORM	FW-500 142*73*13.6T	EA	1
3		1533MSU05120	BOLT-WRENCH(FH)M5X12	BOLT-WRENCH(FH)M5X12	EA	4
4		1532MSU04150	BOLT-WRENCH(ST)M4*15-SUS	BOLT-WRENCH(ST)M4*15-SUS	EA	4
5		1540MSU04000	NUT(HEX) M4*07-SUS	NUT(HEX) M4*07-SUS	EA	4
6		1510MSU0412	T SCREW M4X12	T SCREW M4X12	EA	4

1.6. C/T BOX ASS'Y (PPPFW4MCTBPPPPP2)

No	Image	Part Code	Parts Name	DESCRIPTION	Unit	Q'ty
1		9104A0000150	C/T BOX	FW500 426*326*166	EA	1
2		9204A0000080	STYROFORM BOX(LOWER)	FW500 420*310*80	EA	1
3		9204A0000090	STYROFORM BOX(UPPER)	FW500 420*310*80	EA	1
4		9106A0000050	CT GUIDE	FW500 750 X 30 X 5	EA	1
5			MANUAL		EA	1
6		9305A000001B	POLY BAG	500*650*0.04T(S2000)(SET,HD)	EA	1
7		9400A0000460	SILICAGEL		EA	2

1.7. IMAGE ASS'Y (PPPFW4MIMGBPPPPP1)

No	Image	Part Code	Parts Name	DESCRIPTION	Unit	Q'ty
1		9020FW410330	Sticker (Warning)		EA	1
2		9020FW420330	Sticker (Spec.)		EA	1
3		9020FW43033-0	Sticker (Sus Tray Sticker)	FW-500 52.5*1t	EA	1
4		3070FW400330	FRONT DISPLAY CASE		EA	1
5		9020FW44033-0	Sticker(COVER)		EA	1
6		9020-FW4-1533-0	CAPASticker (Capa.)			

1.8. TILTING DISPLAY ASS'Y (TILTING OPTION)

No	Image	Part Code	Parts Name	DESCRIPTION	Unit	Q'ty
1		1000A0001690	TILTING DISPLAY BRACKET GUIDE	FW500 79*36.2*1.2t SUS304	EA	1
2		2610A0000170	HANDLE(INSERT)	CI-200S SUS M6*7	EA	2
4		1000A000168A	TILTING DISPLAY BRACKET	FW500 76.60*60*1.2t SUS304	EA	1

8.1.3 FW500 (Design part)

No.	Part Name	Type	Material	Design Code (KO)	Design Code (EN)
1	Front Display Case (LCD)	필름인서트 사출	-	3070-FW4-0000-0	3070-FW4-0033-0
2	Rear Display Case (LCD)	필름인서트 사출	-	3070-FW5-0000-0	3070-FW5-0033-0
3	Front Display Case (LED)	필름인서트 사출	-	3070-FW6-0000-0	3070-FW6-0033-0
4	Rear Display Case (LED)	필름인서트 사출	-	3070-FW7-0000-0	3070-FW7-0033-0

5	Tray Sheet	네임플레이트	PC	-	3800-FW4-0033-0
6	Sticker (Warning)	스티커류	Silver oiled paper	9020-FW4-1000-0	9020-FW4-1033-0
7	Sticker (Spec.)	스티커류	Silver oiled paper	9020-FW4-2000-0	9020-FW4-2033-0
8	Sticker (Sus Tray Sticker)	스티커류	Transparent Sticker	9020-FW4-3000-0	9020-FW4-3033-0
	Sticker(COVER)			9020-FW4-4000-0	9020-FW4-4033-0
9	Sticker (Capa.)	스티커류	Silver oiled paper	-	9020-FW4-0633-0
10	Sticker (Capa.)	스티커류	Silver oiled paper	-	9020-FW4-1533-0
11	Sticker (Capa.)	스티커류	Silver oiled paper	-	9020-FW4-3033-0